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ABSTRACT

Psychological literature on field independence shows that the field independent individual possesses enhanced cognitive restructuring abilities, while the field dependent individual possesses interpersonal and social skills. It was hypothesized that field independence would be related to the acquisition of linguistic competence, and that field dependence would be related to the acquisition of ccmmunicative competence. The scores of some 300 students on a test of communicative and integrative competence were correlated. Student sex and scholastic aptitude were included in the design as moderator variables. The students were enrolled in a first semester college Spanish class. The results indicate that field independence plays a role in second language acquisition. This role was particularly noticeable in the acquisition of linguistic competence and integrative competence. It was only barely noticeable in the acquisition of communicative competence. Some possible classroom strategies for dealing with field dependent learners are discussed. (Author)

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THE RELATIONSHIP OF FIELD-DEPENDENT-INDEPENDENT COGNITIVE STYLES TO FOREIGN LANGUAGE ACHIEVEMENT

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While most normal humans acquire a basic competence in their first language, second language learners display great variability in the level of proficiency they attain in the new tongue. As Neufeld (1979) states so succinctly, the ultimate goal in second language learning research is to develop a model that explains how and why student performances vary in different language learning tasks. Although instructional methods and learning environments are often factors in such a model, during the last ten years a significant amount of attention has been focused on the individual learner as a central element in the complex process of learning another language. Given this concern researchers have attempted to isolate particular learner traits and cognitive processes which enhance or hinder progress in learning another language. It is hoped that such research will not only reveal important learner differences but also indicate appropriate individualized educational techniques that can promote a greater degree of language learning success among more people.

A learning factor which has received consideration by researchers is the cognitive style construct known as field dependence-independence (FD/I). Cognitive style is a psychological term used to describe individual differences in the way one habitually tends to perceive, organize, analyze, or recall information and experience. According to recent interpretation (Witkin et al., 1979), field dependence (FD)

and field independence (FI) signify contrasting tendencies to rely either on external or internal frames of reference, respectively, in processing information. These stylistic preferences are thought to consistently influence behavior in cognitive, psychological, and interpersonal functioning. Theoretically, the tendency toward field independence in information-processing is believed to nurture greater cognitive restructuring ability in various perceptual and symbolic tasks. Conversely, a field-dependent cognitive style preference is considered to foster greater skill in interpersonal or social behaviors.

Witkin and Goodenough (1977a) propose that FD persons develop an interpersonal orientation which not only allows them to focus on other people for information and structure but also leads to competence in understanding and dealing with others. They offer a review of the research evidence, concluding that field-dependent people are strongly interested in others, sensitive to social cues, apt to display emotional openness, seen as outgoing by other people, and may possess social skills that are less-evident in field-independent individuals.

Field independents, on the other hand, are believed to have developed more definite boundaries between the outer world and the inner core of attributes, needs, and feelings often described as the self (Witkin et al., 1979). There is a greater autonomy from external sources of information, especially from such a common source as other people, when

performing intellectual tasks or participating in social situations. In theory this self-reliance leads to a more impersonal orientation among field-independent people. For instance, Witkin and Goodenough (1977a) discuss evidence that relatively FI persons are likely to need psychological distance from others, to be seen as aloof, and to be less sensitive than FD people to either the social undercurrents of a situation or their own individual social stimulus value. These authors suggest that the characteristics associated with FI may result in reduced effectiveness in the interpersonal arena.

However, the FI inclination is conceived as beneficial to the development of cognitive restructuring abilities. This type of cognitive analysis involves changing or acting upon the "field" of available information rather than using it "as is." This process is thought to be better developed in FI individuals than in the less autonomously functioning FD persons who may adhere to a percept or symbolic representation as given when dealing with restructuring tasks (Witkin et al., 1979).

Restructuring can take various forms, such as breaking up an organized field so that its parts are viewed as discrete from the background, providing structure to a field which lacks it, or imposing a new organization on a field which is different from the one suggested by its inherent or external pattern (Witkin and Goodenough, 1977a).

More specifically, in the visual-spatial area of cognitive processing, greater degree of FI has been associated with such restructuring tasks as disembedding, perspectivism,

speed and flexibility of closure, set-breaking, and concept-attainment through hypotheses-testing. There is some indication that this restructuring behavior extends into verbal information processing as well. For instance, psycholinguistic studies on first-language sentence disambiguation and deeper-level grammatical transformations suggest that certain verbal processing procedures are similar to those which are employed in performing the visual-spatial tasks linked to FD/I. Once again the FI style preference is likely to be related to greater cognitive analytical ability in the verbal domain (Witkin and Goodenough, 1977b).

Throughout the psychological literature FD/I is portrayed as consistently affecting patterns of learning, thinking, and social interaction. With such a broad influence, it has logically been mentioned as a potentially important variable in education (Witkin, 1978).

The possible revelance of cognitive styles to second language learning was suggested in the early 1970's (Brown, 1973). Since then a number of scholars have investigated the issue, primarily examining FD/I (Tucker et al., 1976; Bialystok and Frohlich, 1977, 1978; Naiman et., 1978). These several studies all researched FD/I as a cognitive disembedding ability which might affect the second language performance of secondary school students studying French-as-a-Second-Language (FSL) in Canada.

The project conducted by Naiman et al. (1978) indicated that FI and FD students appeared to process and produce linguistic structures in different ways. This group also found that greater field independence was significantly

related to better performance on imitation and listening comprehension tasks, especially at the more advanced stages of French study. Tucker et al. (1976) did not find this same relationship for younger students on listening comprehension, reading comprehension, or oral production tasks. However, this investigation did link greater field independence to better performance on an achievement test of general language skills. By contrast, the findings of Bialystok and Frohlich (1977, 1978) attributed a very minor role in second language learning to field independence. These investigators concluded that FD/I was not strongly predictive of success on the second language reading, listening, and writing tasks which they had selected.

These initial research efforts offer mixed and somewhat inconsistent conclusions about the influence of field dependence-independence upon classroom learning of another language. The mixed findings may stem from such factors as the use of different measures of FD/I, the choice of different second language tasks, the selection of learners with varying ages and second-language proficiency levels, and in some instances small sample groups.

Despite the limited amount and tentative nature of previous research examining field dependence-independence and second language learning, proposals are being made to adapt second language instruction methods and materials to accomodate these stylistic learner differences (Omaggio and

Birckbichler, 1978). Basically, these instructional ideas address the field dependent learner, with the implication that field-independence is preferable for classroom success. The assumption is also made that field-independent behaviors can be induced by training.

Cazden and Leggett (1976) argue that many of educational practices being suggested for field-dependent students are ones usually considered to be aspects of good teaching in general--e.g., providing structure in learning tasks and creating a hospital learning environment. They caution that making specific and prescriptive educational recommendations based on the field-dependence-independence dimension of cognitive style is beyond the current state of knowledge.

In light of the present uncertainties, the purpose of this study was to collect more evidence on the relationship between student's field dependence-independence and subsequent achievement in a formal language class, as well as to suggest avenues for future research.

The central hypothesis utilized in this study is that both the cognitive restructuring abilities associated with field independence and the interpersonal/social skills linked to field dependence enhance progress in learning another language but in different ways (Hansen, 1980). As Palmer (1979) points out, second language proficiency ultimately involves not only skill in linguistic analysis and restructuring, but also competence in authentic social communication. For this reason, the cognitive and social/psychological traits characterizing either style preference seem implicated in the

development of an integrated language proficiency.

However, the style factor may influence L_2 learning in different ways depending on the context and the particular language skills called forth--be they oral or graphic, linguistic or communicative in nature. As an example, Brown (1978) proposes that field independence may be beneficial in the formal instructional situation whereas field dependence may augment second language development in the informal context. Accordingly, a particular second language task may call upon either or both sets of skills--restructuring and/or interpersonal--depending on the linguistic or communicative focus of the activity.

Since a full analysis of the role of FD/I employing the complete range of language modalities in a variety of language settings was beyond the scope of this project, the present research examines a limited number of questions about the field-dependence- independence construct within one common language learning situation. Here, the context of interest was a formal, introductory foreign language class where college students were learning both linguistic and communicative competence in the target language of Spanish. The principal question concerned the general relationship between the students' degree of FD/I and their performance on measures of linguistic, communicative, and integrative competence in the second language. Secondarily,

the study addressed the influence of student sex and scholastic ability in conjunction with cognitive style as factors in L_2 achievement.

METHOD

Subjects

Approximately 300 students in a beginning-level Spanish course at the University of Colorado-Boulder formed the sample group for this research investigation. They were assumed to constitute a representative sample of undergraduates in first-semester Spanish at similar universities and to have been randomly assigned to discussion sections during course registration. It was also accepted that the participants had been appropriately classified as beginning language students because of university regulations which deny credit to students who take a beginning class in a language they have studied within the past five years.

The course sought to promote Spanish proficiency in two skill areas: linguistic and communicative. The course met 50 minutes daily, five days per week, for a 16-week semester. Twice each week the entire group of nearly 300 students attended a lecture on Spanish grammar taught by one of the authors. Students met for the remaining three classes each week in small-group sections of about 20 people. Here emphasis was placed on developing communicative competence tasks. Students were graded seperately on their linguistic

and communicative competence all semester. A comprehensive description of the instructional program is available elsewhere (Stansfield, 1974).

Research Design and Instrumentation

A correlational research design was used to address the issues pertinent to this tudy. The independent variable was student FD/I, assessed by performance on the Group Embedded Figures Test (GEFT, Witkin et al., 1971). This exercise requires the subject to perceive and outline a simple geometric figure within a larger, more complex design which serves to obscure the simpler shape. The subject must overcome the organizational context, "disembedding" discrete, relevant information from the "field." This abilty to locate, or separate, an item from context has been associated with the ability either to restructure a given organizational context, or to impose structure on a field which lacks a clear organization. (Witkin and Goodenough, 1977b). Theoretically, the restructuring skills elicited by such a task also apply when performing similar cognitive operations with verbal or symbolic material.

The moderating factors of student sex and scholastic ability were included for their possible influence on Spanish achievement. However, sholastic ability information was not available for everyone in the research sample. While only ten persons declined researcher assess to such data, the student files contained academic aptitude scores for only

about half of the participants. This information is summarized in Table I.

Spanish language proficiency was the dependent variable, separated into three components of language ability: linguistic, communicative, and integrative. These three elements were assessed with several performance measures which will be discussed separately.

Linguistic Competence: This component of language proficiency was measured by students' performance on written discrete-point examinations of Spanish grammatical knowledge. One indicator of linguistic competence was each student's Written Exam Grade Average, a numerical average derived from scores on six unit tests taken over the course of the semester. These exams were developed collectively by the instructional staff. They were designed to assess mastery of a definable set of linguistic skills from each unit. Scores on the Final Exam, a comprehensive achievement test developed in the same fashion as the unit exams, were also used to denote Spanish linguistic competence.

Communicative Competence: The communicative aspect of each student's proficiency was assessed by two measures: Oral Grade Average and Oral Skill Evaluation. The Oral Grade Average was derived by the instructors from oral tests given throughout the semester during the small group sessions. These required students to formulate and comprehend messages in Spanish. The tasks included such activities as interviews, quiz games, role-playing, question-answer periods, and free

TABLE I

SAMPLE GROUP SCHOLASTIC ABILITY INFORMATION*

	N	Range	Mean	Median
A.C.T. - English	102	12-30	20.56	20
A.C.T. - Math	102	5-33	22.57	23
A.C.T. - Composite	102	11-32	22.47	23
S.A.T - Verbal	66	290-710	475.00	470
S.A.T. - Quantitative	66	250-680	511.00	515

*Standardized Test Information:

A.C.T. - Mean = 20; standard deviation = 5.
S.A.T. - Mean = 500; standard deviation = 100.

discussion. Upshur (1975) states that this type of regular, longitudinal monitoring by teachers offers a valid and comprehensive view of progress. The Oral Skill Evaluation required each instuctor to evaluate their students' Spanish oral abiltiy in terms of the average expected performance level for a beginning student at the end of one semester of foreign language study. Thorndike and Hagen (1977) discuss the problems of reliability and validity which are inherent in rating instruments. They also state that the ideal rater is one who has had adequate opportunity to observe the person being rated in those situations where he would be likely to show the qualities being evaluated. This expectation was met since each student's instructor did the oral ability rating after 16 weeks of observation. Further support of teacher's competence in judging student proficiency is offered by Ingram (1968), who established a correlation of .75 between the instructors' subjective ratings of students' oral skills and performance on standardized oral test.

Integrative Competence: A third component of L_2 proficiency was labeled integrative competence, implying the integration of linguistic and communicative skills leading to full, functional proficiency (Palmer, 1979; Stansfield, forthcoming 1981). Final Course Grades were utilized as one measure of integrative language skill, based on each student's performance on linguistic (55% of total grade) and communicative (45% of grade) tasks.

Along with course grades, a multiple-choice Cloze Test was included as a second measure of integrative skill. During the last decade a growing body of literature has accumulated on using the cloze procedure as an evaluation device for assessing general proficiency in the second language (Oller, 1973, 1976; Aitken, 1975, 1977). Theoretically, a person needs to employ the totality of interrelated skills that comprise a language system (e.g., lexical, grammatical, contextual) in order to predict accurately what word would appropriately occur in each empty space. This prediction appears to take place through an hypothesis-testing strategy based on one's internalized grammar of the language. For the second language learner, the accuracy of this technique or strategy reflects his or her degree of underlying L_2 proficiency. Performance on second language cloze tests does bear a strong and consistent relationship to achievement on a variety of standardized language tests (Aitken, 1977). Furthermore, Jonz (1976), Cox (1977), and Carstens (1979) all suggest that the multiple-choice type of cloze test is a valid, reliable proficiency measure appropriate for lower-level students.

Procedures

Toward the end of the semester the researchers met with the course instructors to explain the research project and instruments. At that time all instructors were asked to complete the Oral Skill Evaluation for each student. The GEFT was administered to all of the students during a

large-group lecture session. One of the researchers discussed the project with the group and urged everyone to participate. Only a few didn't, appearing to study instead. No attempt was made to coerce those individuals. Nor was there any subsequent effort to test either them, the people whose booklets showed confusion about test instructions, or anyone who was absent. As a result, usable FD/I scores were obtained for 253 of the 293 students completing the course. The language proficiency measures were collected as part of the normal course evaluation proceedings.

Data Analysis and Results

Initially, Hoyt reliability estimates were obtained for the GEFT (.90), the Final Exam (.97), and Cloze Test (.75).

Correlational procedures (Pearson product moment) were then used to determine the direction and strength of the relationship between student FD/I and performance on the six measures of Spanish proficiency. Where possible the observed correclations were corrected for attenuation to reduce measurement error (Nunnally, 1978). The results of both sets of calculation, observed and disattenuated, appear in Table II. All of the correlations proved to be positive and significant at the .05 level. The positive trend of the correlations indicates that among these students a greater degree of field independence, as opposed to field dependence, was associated with a higher level of acheivement on all the measures of Spanish proficiency.

TABLE II

CORRELATIONS BETWEEN STUDENT FD/I (GEFT SCORE)[a] AND PERFORMANCE ON SIX MEASURES OF SPANISH PROFICIENCY

Language Measure	n	Observed Correlation[b]	Disattenuated Correlation[c]
Linguistic Competence			
Written Exam Grade Average	253	.23*** (.11, .35)	(1) .24***
Final Exam	251	.26*** (.14, .38)	(2) .28***
Communicative Competence			
Oral Grade Average	236	.19** (.07, .31)	(1) .20***
Oral Evaluation	252	.20*** (.09, .32)	(1) .21***
Integrative Competence			
Final Course Grade	253	.20*** (.08, .32)	(1) .21***
Cloze Test	221	.35*** (.23, .46)	(2) .43***

*p<.05
**p<.01
***p<.001

[a]A higher GEFT score indicates a relatively greater degree of field independence.

[b]The figures in parentheses below the observed correlations represent the .95 confidence interval.

[c]In this column (1) signifies disattenuation for one variable and (2) shows a similar correction on two variables.

While the observed and disattenuated correlations between FD/I and the several aspects of L_2 competence were all significant, the strength of these relationships varied. For example, the strongest (disattenuated) relationship (r=.43) was found between FD/I and scores on the Cloze Test, an indicator of integrative competence. Performance on the two linguistic competence measures, Final Exam and Written Exam Grade Average, correlated at r=.28 and r=.24, respectively, with FD/I. The lowest correlations, when corrected for attenuation, were found between students' FD/I and Final Course Grade (r=.21), Oral Skill Evaluation (r=.21), and Oral Grade Average (r=.20).

In addition to the major correlations, another set of correlational information was produced to assess the relationship between FD/I and the two moderator variables, student sex and student scholastic ability. The latter was indicated by A.C.T.-Math and -English scores for a subgroup of 102 students. The results of that analysis are shown in Table III.

The negative correlation of r=-.1 between FD/I and the first moderator factor, student sex, was low and not significant at the .05 level. The negative nature of this coefficient indicates that a slightly higher degree of field independence was associated with the male versus the female group in this sample, where male had been coded as 1 and female as 2. On the other hand, the correlations be-

TABLE III

OBSERVED CORRELATIONS BETWEEN INDEPENDENT, MODERATOR, AND DEPENDENT MEASURES (NUMBER OF CASES IS SHOWN IN PARENTHESES)

	Sex	A.C.T.-English	A.C.T.-Math
FD/I			
GEFT	-.1 (253)	.32*** (102)	.48*** (102)
Language Proficiency			
Written Exam Grade Average	.22*** (293)	.36*** (102)	.36*** (102)
Final Exam	.14** (251)	.34*** (102)	.36*** (102)
Oral Grade Average	.26*** (236)	.35*** (95)	.25** (95)
Oral Evaluation	.28*** (252)	.31*** (102)	.16* (102)
Final Course Grade	.21*** (293)	.34*** (102)	.22* (102)
Cloze Test	.11* (254)	.39*** (90)	.46*** (90)

*p<.05
**p<.01
***p<.001

tween student sex and foreign language proficiency were all positive and significant, ranging from r=.11 to r=.28 and showing that females were consistently performing at a higher level.

The second moderator variable, student scholastic ability, was also found to relate closely to both student FD/I and L_2 achievement for the subgroup of students analyzed in this part of the correlational procedures. For instance, the observed correlation between A.C.T.-English and FD/I was .32 whereas that of FD/I and A.C.T.-Math was .48. The correlations between the academic achievement scores and student performance on the language proficiency measures ranged from .16 (A.C.T. -Math and Oral Evaluation) to .46 (A.C.T.-Math and Cloze Test).

As a result of these overlapping relationships among the independent, moderator, and dependent measures, along with the redundant validity problems inherent in the various instruments, partial correlation techniques were then used to assess the data further.

First, student sex was partialled out of the correlations (Table IV). In each instance the correlations between student FD/I and level of Spanish proficiency were raised slightly when the influence of student sex upon these tasks was removed. Moreover, the partial correlations showed a directional pattern similar to that found in the initial correlations (compare Table II and Table IV).

In the next partial correlation student scholastic ability was removed by using A.C.T.-Math scores since they had been

TABLE IV

FIRST-ORDER PARTIAL CORRELATIONS BETWEEN STUDENT FD/I (GEFT SCORE)[a] AND PERFORMANCE ON SIX MEASURES OF SPANISH PROFICIENCY, PARTIALLING OUT STUDENT SEX

Language Measure	n	Observed Partial Correlation	Disattenuated Partial Correlation[b]
Linguistic Competence			
Written Exam Grade Average	253	.26	(1) .27
Final Exam	251	.28	(2) .31
Communicative Competence			
Oral Grade Average	236	.23	(1) .24
Oral Evaluation	252	.24	(1) .25
Integrative Competence			
Final Course Grade	253	.23	(1) .24
Cloze Test	221	.37	(2) .45

$p<.001$ for all these coefficients

[a] A higher GEFT score indicates a relatively greater degree of field independence.

[b] In this column (1) signifies disattenuation for one variable and (2) shows a similar correction on two variables.

TABLE V

FIRST-ORDER PARTIAL CORREALTIONS BETWEEN STUDENT FD/I (GEFT SCORE)[a] AND PERFORMANCE ON SIX MEASURES OF SPANISH PROFICIENCY, PARTIALLING OUT SCHOLASTIC ABILITY (A.C.T.-MATH SCORE)

Language Measure	Observed Partial Correlation	Disattenuated Partial Correlation[b]
Linguistic Competence		
Written Exam Grade Average	.07	(1) .07
Final Exam	.11	(2) .13
Communicative Competence		
Oral Grade Average	.08	(1) .08
Oral Evaluation	.14	(1) .15
Integrative Competence		
Final Course Grade	.11	(1) .12
Cloze Test	.17	(2) .22*

n = 102
*p<.05

[a]A higher GEFT score indicates a relatively greater degree of field independence.

[b]In this column (1) signifies disattenuation for one variable and (2) shows a similar correction on two variables.

more strongly associated with FD/I. The findings, displayed in Table V, only produced a significant relationship between FD/I and performance on the Cloze Test (r=.22).

To summarize, the findings showed for this sample students with a relatively greater degree of field independence, as opposed to field dependence, achieved at a higher level on all six measures of Spanish proficiency. The correlational analyses established a significant positive relationship between FD/I and L_2 competence even when partialling out any moderating effect of student sex. However, when student scholastic ability was taken into account, with a subgroup of students, the correlations between student FD/I and performance on the Spanich proficiency measures remained positive but were substantially weakened.[1] The one relationship to maintain significance under those conditions was that between student FD/I and Cloze Test score.

Discussion

The central hypothesis in this exploratory study was that traits associated with both field dependence and field independence would enhance various aspects of foreign language skill development. Yet, among the college students who formed the sample group here, the results indicate that field independence, of cognitive restructuring ability, was related to better performance in formal, introductory-level Spanish language course.

This conclusion is evident from the series of significant, positive correlations between student cognitive style and

scores on the foreign language achievement measures. These correlations reveal the direction and strength of the relationship between FD/I and performance in the three areas of L_2 competence--linguistic, communicative, and integrative.

One problem inherent in correlational analysis is that statistically significant correlations may be found when the observed association is actually rather weak. Another difficulty is that the existence of a correlational relationship does not necessarily imply a cause-and-effect connection between the two variables; rather, it attests to an associational link and may furnish clues to the causes. In this case, the existence of significant and positive correlations is interpreted as an indication that the cognitive restructuring abilities linked to field independence are perhaps being utilized to promote successful performance on various second language tasks. Nonetheless, it is interesting to note that the strength of the relationship between cognitive restructuring skill and second language achievement varies among the three aspects of language proficiency examined in this study. Those varying relationships will be discussed, in order, from the weakest to the strongest.

The lowest correlations were found between student FD/I and performance on not only the two ratings of communicative competence, Oral Grade Average and Oral Evaluation, but also the integrative measure Final Course Grade. The

latter observation, however, was partially derived (45%) from each student's oral grades received during the semester and thus overlaps with the communicative competence assessments. Though statistically significant, the associational data did not show a notably strong relationship in this area of language proficiency. Thus, apparently cognitive restructuring skills are involved to some extent in successful classroom communication in another tongue, but in a more minor fashion than in the other areas of foreign language proficiency, the linguistic and the integrative. As pointed out by Oller and Hinofotis (1976) overall second language proficiency seems to involve a separate "speaking ability" factor beyond the substantial factor of "general competence" identified in their research. It is presumed that this speaking factor was evaluated in the observations of Spanish communicative competence employed in this study. Moreover, speaking ability may be more closely linked to field-dependent behaviors than field-independent ones. For example, the well-developed social skill and personal characteristics of outgoingness and warmth which are associated with field dependence possibly allow such individuals to communicate with ease and use the new language appropriately for social and communicative purposes. A strong interest in other people and attentiveness to social cues in the communication task perhaps leads to effective communicative skill. This would explain the lower correlations in this area of L_2 proficiency obtained in this study.

The next strongest correlations were found between student FD/I and Spanish linguistic competence. In this instance, greater cognitive restructuring ability was related to better achievement on discrete point tests, i.e., the Written Exam Grade Average and Final Exam. The evidence suggests that the ability of a more field-independent person to organize, analyze, and structure both perceptual and symbolic material is at work in learning the linguistic system of another language. Indeed, the internal, analytical approach associated with FI may lead to greater metalinguistic awareness in second language learning; further, it may be the underlying psychological basis for the successful "monitoring" behaviors described by Krashen (1977) as techniques which aid the development of a conscious grammar knowledge so necessary on most traditional foreign language exams.

The strongest association between student FD/I and second language skill was found on the Cloze Test measure of integrative competence. The cloze procedure has been widely utilized as a measure of general second language proficiency, though the "precise skills measured by the cloze test and the problem-soving processes which they presuppose have not been specified" (Bialystok and Howard, 1979, p. 27). In a recent study, Bialystok and Howard (1979) concluded that inferencing was an integral component in the solution of second language cloze tests. They defined inferencing as the ability to exploit available information sources maximally in order to gain new insights

into unknown aspects of the target language. Such competence may derive from a field-independent cognitive style; at least the associational data of this study offer support for the existence of similar cognitive restructuring processes being used on both the Cloze Test and the Group Embedded Figures Test. This, in turn, suggests that the processes used in restructuring linguistic information maybe related to those utilized in the visual-perceptive domain.

While the pattern of these relationships was retained in the partial correlations, partialling out the influence of student scholastic ability lowered the association between FD/I cognitive style and L_2 achievement considerably. The difficulty in interpreting these changed correlations arises from the possibility that the level of one's A.C.T.-Math score may result from the ability to learn quantitative material--a quality which was perhaps originally influenced by the student's degree of FD/I. It is thus difficult to ascertain exactly what is being partialled out in this analysis, scholastic ability, achievement, or the effects of FI restructuring competence. Furthermore, if intelligence is defined in terms of general cognitive abilities and if a very general ability dimension exists, in factor-analytic terms, "some correlation among spatial restructuring, verbal, and other abilities may be expected" (Witkin and Goodenough, 1977b, p. 15). Nevertheless, even in this conservative analysis, FI continued to be notably related to general Spanish competence on the integrative Cloze Test measure, indicating the possible use of re-

structuring skills in this area.

Essentially there are two academic implications emerging from the findings of this study which deserve mention. In one respect, the results indicate that field independence, or cognitive restructuring ability, is an individual learner trait that plays a positive, albeit minor, role in the development of overall foreign language proficiency. The positive, linear correlations ranging from .20 to .43 between student cognitive style and performance on the various measures of Spanish competence suggest that a relatively greater degree of field independence is associated with a higher level of achievement. Consequently, the data implies that educators might be well advised to be aware of this student FD/I factor in L_2 progress. For instance, Bialystok and Howard (1979) report being able to teach second language students to refine their inferencing strategies, an information-processing approach which is perhaps not readily utilized or available to field-dependent learners without training. Teachers might be trained to adjust their instuctional strategies, materials, and testing methods to benefit all students.

On the other hand, the observed correlational relationships between student FD/I style and Spanish proficiency are generally rather modest. It seems that the association is perhaps not strong enough to merit the design of elaborate educational programs focused solely on the individual variation in FD/I preference. The amount of work

in such adaptations might not yield results commensurate with the effort.

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